

EECE.3170: Microprocessor Systems Design I

Fall 2016

Homework 3

Due **2:00 PM, Wednesday, 9/28/16**—**NO LATE SUBMISSIONS**

Notes:

- No late submissions will be accepted for this assignment, as the solution will be posted on Friday to allow you time to study it before Exam 1.
- While typed solutions are preferred, handwritten solutions are acceptable.
- Any electronic submission must be in a single file. Archive files will not be accepted.
- Electronic submissions should be e-mailed to Dr. Geiger at Michael_Geiger@uml.edu. Please include your name as part of your filename (for example, mgeiger_hw3.pdf).
- This assignment is worth 100 points.

Assume the initial state of an x86 processor's registers, memory, and carry flag are:

EAX: 0x00003170
EBX: 0x9876DCBA
ECX: 0x00001995
EDX: 0xAC921E14
ESI: 0x00008440
CF: 0

Address	Lo		Hi	
0x8440	FF	03	99	87
0x8444	08	09	F6	BB
0x8448	78	15	00	00

What is the result of each of the instructions listed below? Assume that the instructions execute in sequence—in other words, the result of each instruction may depend on the results of earlier instructions. Correctly evaluating each instruction will earn you **10 points**.

Note that you may assume any constant values shown using less than 32 bits are zero-extended to 32 bits if necessary (for example, 0x000F = 0x0000000F).

ADD AX, BX
ADC EAX, ECX
INC WORD PTR [ESI]
MUL BYTE PTR [ESI+4]
SUB AX, [ESI+8]
DEC AH
IMUL AH
IDIV DL
DIV DH
NEG AH